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PSP Cover Sheet

Proposal Title: Sacramento River Public Information Internet Server - Phase 1
Applicant Name: Stacy Capello - Department of Water Resources Northern District
Mailing Address: 2440 Main Street, Red Bluff, CA 96080
Telephone: (530) 529-7352
Fax: (530) 529-7322
Email: capello@water.ca.gov

Amount of funding requested: \$ 400,000 for 3 years

Indicate the Topic for which you are applying (check only one box).

- | | |
|---|---|
| <input type="checkbox"/> Fish Passage/Fish Screens | <input type="checkbox"/> Introduced Species |
| <input checked="" type="checkbox"/> Habitat Restoration | <input type="checkbox"/> Fish Management/Hatchery |
| <input type="checkbox"/> Local Watershed Stewardship | <input type="checkbox"/> Environmental Education |
| <input type="checkbox"/> Water Quality | |

Does the proposal address a specified Focused Action? X Yes No

What county or counties is the project located in? All Counties along the Sacramento River from Collinsville to Keswick Dam.

Indicate the geographic area of your proposal (check only one box):

- | | |
|---|---|
| <input checked="" type="checkbox"/> Sacramento River Mainstem | <input type="checkbox"/> East Side Trib: _____ |
| <input type="checkbox"/> Sacramento Trib: _____ | <input type="checkbox"/> Suisun Marsh and Bay _____ |
| <input type="checkbox"/> San Joaquin River Mainstem | <input type="checkbox"/> North Bay/South Bay: _____ |
| <input type="checkbox"/> San Joaquin Trib: _____ | <input type="checkbox"/> Landscape (entire Bay-Delta watershed) |
| <input type="checkbox"/> Delta: _____ | <input type="checkbox"/> Other: _____ |

Indicate the primary species which the proposal addresses (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> San Joaquin and East-side Delta tributaries fall-run chinook salmon | <input type="checkbox"/> Spring-run chinook salmon |
| <input type="checkbox"/> Winter-run chinook salmon | <input type="checkbox"/> Fall-run chinook salmon |
| <input type="checkbox"/> Late-fall run chinook salmon | <input type="checkbox"/> Longfin smelt |
| <input type="checkbox"/> Delta smelt | <input checked="" type="checkbox"/> Steelhead trout |
| <input type="checkbox"/> Splittail | <input type="checkbox"/> Striped bass |
| <input type="checkbox"/> Green sturgeon | <input checked="" type="checkbox"/> All chinook species |
| <input checked="" type="checkbox"/> Migratory birds | <input type="checkbox"/> All anadromous salmonids |
| <input type="checkbox"/> Other: <u>See attached table</u> | |

Specify the ERP strategic objective and target(s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:

The primary purpose of this proposal is to educate the public about the structure, function, and organization of ecosystems along the Sacramento River and it's major tributaries. A firm understanding of these ecological attributes is critical to implementing successful environmental restoration, rehabilitation, and protection projects (Vol I, Pg. 20).

Table 1. ERPP strategic objectives addressed by project.

Category	Strategic Objective (Primary objectives in bold)	ERPP Reference
Habitat: aquatic, wetland and riparian habitats	Restore large expanses of all aquatic, wetland, and riparian habitats in the Central Valley and its rivers (including riparian and riverine aquatic, freshwater fish, and essential fish habitat)	Vol. 1, p. 103-104
Species: Sacramento winter-run, spring-run, fall-run, and late-fall run chinook salmon	Restore winter-run, spring run, fall-run, and late-fall run chinook salmon to the Sacramento River and Bay-Delta Estuary	Vol. 1, p. 220-223
steelhead trout	Restore self-sustaining Central Valley steelhead to Central Valley streams and the Bay-Delta estuary	Vol. 1, p. 229
Swainson's hawk	Restore Swainson's hawk populations	Vol. 1, p. 249
Species: valley elderberry longhorn beetle	Increase and maintain valley elderberry beetle habitat	Vol. 1, p. 286-287
Species: western yellow-billed cuckoo	Restore populations of yellow-billed cuckoo throughout its historical range in the Central Valley	Vol. 1, p. 304
Species: bank swallow	Increase the number of breeding colonies of bank swallow in the Central Valley	Vol. 1, p. 307
Species: least Bell's vireo	Restore least Bell's vireo to representative habitats throughout its former range	Vol. 1, p. 312
Species: California yellow warbler	Restore and protect habitats used by neotropical migrant birds for breeding and forage in the Central Valley	Vol. 1, p. 314
Species: little willow flycatcher	Restore little willow flycatcher populations to habitats throughout its former range in central California	Vol. 1, p. 317-318
Species: native resident fish species	Reverse the decline of native resident fishes	Vol. 1, p. 347
Species: shorebird and wading bird guild	Provide high quality habitat and transition zone [habitat] that allow shorebirds (and wading bird) access to both feeding and nesting	Vol. 1, p. 355-356
Species: waterfowl	Enhance populations of waterfowl for harvest by hunting and for nonconsumptive recreation.	Vol. 1, p. 360
Species: neotropical migratory bird guild	Restore and protect habitats used by neotropical migrant birds for breeding and forage in the Bay-Delta watershed.	Vol. 1, p. 363

By educating the public about these ecosystems and keeping them abreast of CalFed's goals and objectives as well as current projects along the river, we will be contributing to the ultimate success of CalFeds efforts to restore ecological health along the river. See attached table for specific objectives and targets that this project addresses.

Indicate the type of applicant (check only one box):

- | | |
|--|---|
| <input checked="" type="checkbox"/> State agency | <input type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit |
| <input type="checkbox"/> Local government/district | <input type="checkbox"/> Private party |
| <input type="checkbox"/> University | <input type="checkbox"/> Other: _____ |

Indicate the type of project (check only one box):

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> Planning | <input type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring | <input checked="" type="checkbox"/> Education |
| <input type="checkbox"/> Research | |

By signing below, the applicant declares the following:

- 1) The truthfulness of all representations in their proposal;
- 2) The individual signing the form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization); and
- 3) The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section 2.4) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

Ralph N. Hinton
Printed Name of Applicant

Ralph N. Hinton
Signature of Applicant

99B-164

EXECUTIVE SUMMARY

Our proposal seeks funding to develop and maintain an interactive public information web site using dynamically generated maps as a way to access spatial information on the Sacramento River. This interactive web site will be designed around a map and aerial photo interface with links to information about the Sacramento River. Links would include:

- *public information - location of public vs. private lands (public agency ownership, accessibility), public facilities (fishing, camping, day use access), and*
- *general information (history, restoration projects, CalFed/1086 information).*

This interface will be relatively simple and easy to use and would allow the user to dynamically select and create maps over the Internet using a set of menus and a graphic interface. This user interface will be developed so that it would run on any appropriately configured personal computer and could easily be updated by staff. Maps will be developed using existing GIS information and available aerial photography of the Sacramento River. There will also be links to ground photographs which highlight mapped areas.

Accessibility issues are very important to landowners who own and farm property along the Sacramento River. Millions of dollars have been spent in the SB1086 process collecting numerous layers of spatial information on the Sacramento River and its major tributary streams. Linking maps and airphotos with information related to accessibility, restoration and recreation addresses the need to begin decimating this information to the public.

Our project also intends to coordinate, collect and serve this information over the Web from a site developed and maintained at California State University, Chico's Geographical Information Center. Downloadable maps will be save-able in multiple formats including PDF (Adobe Acrobat), EPS (Illustrator), and/or BMP (raster).

DWR plans to develop the web site in a series of phases over a three year period of time. This proposal covers the set-up and initial online delivery which is to be completed within one year of the approval date. Additionally, Phase 1 covers the maintenance and updating of the server, data, and associated maps and images for an additional period of two years following initial online delivery.

Phase 1 cost is \$200,000 and includes computer hardware costs. Deliverables for Phase 1 include:

- *developing a web site to provide public access to GIS data relating to restoration, recreation, and public access issues along the Sacramento River and to build the engine for delivering this data over the World Wide Web. Our initial project area includes the entire area of the Sacramento River from Collinsville (River mile 0) to Keswick Dam (RM 301) including the Feather River, the American River and major tributary streams,*
- *developing online maps that are cartographically pleasing and focus on providing clear*

information about restoration, recreation, and public access issues. Online maps will also provide graphical access (1:24,000 scale) to GIS data collected through the SB1086 and CalFed programs,

- *developing maps including airphotos of the Sacramento River, point features, a raster topo map layer, a digitized vegetation layer, and digitized public lands layer with conservation easements,*
- *establishing point features and polygons linked to information including ground level photos of the river, information on local services, historic event descriptions, land use information, other web sites, information on obtaining permits for use of public lands, future plans for selected resource areas, detailed information on meanderbelt related issues and/or historic river movements, etc. Existing data will be used for all data except those areas where new orthophotos need to be made (from existing photography) and for establishing point features.*
- *maintenance and updating of the server, data, and associated maps and images for a period of two years following web delivery.*

Funds requested: \$400,000 includes hardware, software development, data preparation and/or conversion, web site development, and web site maintenance for two years beyond initial deployment.

The Northern District of the Department of Water Resources has been involved in GIS mapping along the upper Sacramento River since the early 1990's. In cooperation with the Sacramento River Advisory Council (SB-1086), DWR-Northern District has developed an extensive GIS that covers the Sacramento River from Keswick Dam to Verona. One of the primary purposes of this dataset is to assist both scientists and laypeople in understanding and analyzing land use and vegetation patterns, flooding, erosion, and channel dynamics on the river. By making this information available on the Internet in a useful and visually pleasing format, we will greatly enhance public understanding of the river system and its relationship to the goals and objectives described in the CalFed Ecosystem Restoration Program Plan and the Sacramento River Conservation Area Handbook.

The Geographical Information Center (GIC) is a full service applied GIS laboratory associated with the Department of Geography and Planning at California State University, Chico. The GIC is tied to the non-profit CSU, Chico University Research Foundation and is entirely supported by external funding. We have been involved with mapping the Sacramento River since 1991. We have also produced maps for six watershed projects and will be providing support to three upcoming mapping programs. Our Sacramento River riparian mapping projects produced 1:1000' scale and larger maps of the entire river from Collinsville to Keswick Dam. In addition, we are currently finishing a two year project to map the entire Cantara watershed (Sacramento River from Shasta Lake to Box Canyon Reservoir).

The GIC is also becoming a major player in providing web based GIS applications. We are currently developing applications that provide solutions to render GIS data over the web. These applications give us the ability to serve better data over the Internet by reading pre-existing GIS files developed in standard GIS data formats.

PROJECT DESCRIPTION

Our CalFed proposal seeks funding to develop a public information Internet server with links to existing map and GIS information on the Sacramento River. Our initial project area includes the entire area of the Sacramento River from Collinsville (River mile 0) to Keswick Dam (RM 301) including the Feather River, the American River and major tributary streams.

One of the primary functions of the server is to both educate and inform the public on public access issues along the river. Accessibility issues are very important to landowners who own and farm property along the Sacramento River. Millions of dollars have been spent in the SB1086 process collecting numerous layers of spatial information on the Sacramento River and its major tributary streams. Linking maps and airphotos with information related to accessibility, restoration and recreation addresses this need to begin disseminating information to the public.

Many thousands of acres of land have been purchased for restoration and public use along the Sacramento River through the CalFed, Proposition 204, and SB1086 programs. Maps are available showing many of these areas by agency but this information is currently not readily available to the public. One publication attempted to merge this gap by providing paper maps of the upper Sacramento on 7.5 minute quadrangles. "Upper Sacramento River Public Lands Access and Recreation Facilities Inventory: Maps and Database Table," was published by California State Department of Parks and Recreation (State Parks) in 1994. Maps show title by ownership (state, federal, county, city, private) and by agency (California Department of Water Resources, U.S. Fish and Wildlife Service, etc.).

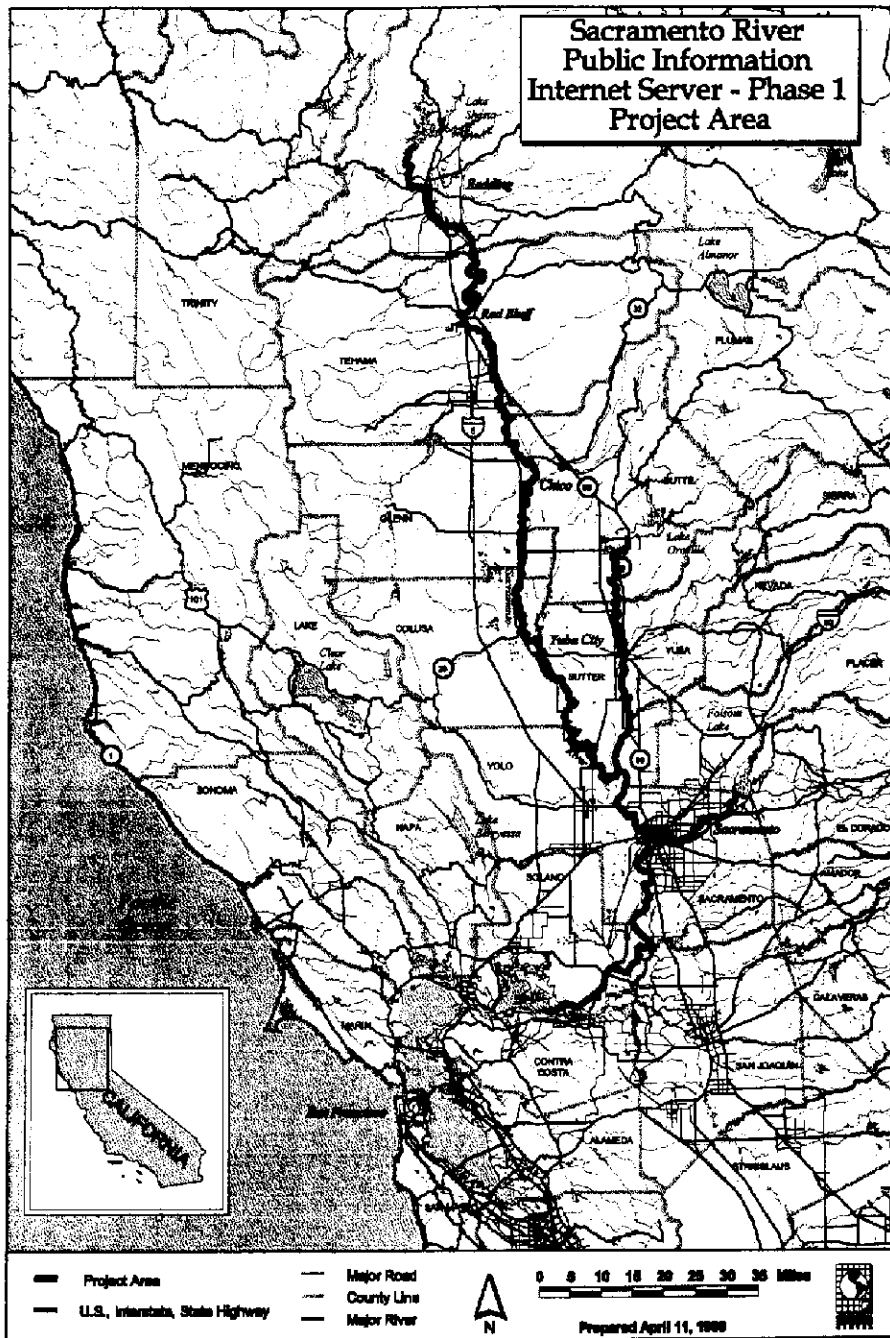
This book was contracted to State Parks when it became evident that planning activities with private landowners on the Sacramento River identified a lack of information regarding public access and recreational opportunities on the river, and there was increased trespassing on private lands to gain river access. This information was developed on a GIS and but currently is not available online. It is also almost five years old.

Other agencies map public lands as well. Paper maps are published by the Department of Boating and Waterways ("Boating Trail Guides to the Sacramento River") which illustrate and list fishing access and recreation sites along selected sections of the river. Much of this information is available digitally. Some is not and will have to be scanned or digitized. However, it is important that we get this information out to the public.

Our web site will also include a general information section about the river which relates to its history and the SB1086 planning process. This type of information contributes to everyone's knowledge of the Sacramento River and forms a historical background to the Upper Sacramento River Fisheries and Riparian Management planning process.

We intend to coordinate, collect and serve this information over the Web from a site developed and maintained at California State University, Chico's Geographical Information Center (GIC). Additionally, we intend to use a custom software package, developed at the GIC,

**Sacramento River
Public Information
Internet Server - Phase 1
Project Area**



that will allow us to serve maps over the web. This system is being developed so that it could be installed to run at an off campus site when it is up and running. Further, it will be designed so that additions and deletions will be a relatively simple process and it will be developed on a platform that can be expanded as the system grows.

This custom Internet server system that we are proposing would allow the web browser to dynamically select and create maps over the Internet using a set of easy-to-use menus and a graphical interface. Unlike most online map systems available today, the system we are developing would be:

- *viewable on all types of computers,*
- *developed to provide the user with pre-built maps emphasizing good cartographic design and, at the same time, would give the user the ability to make individualized map views from selected GIS map and data sets, and*
- *designed to be open-source so that someone using the system could fully customize it to meet their needs.*

The main system functions from an end-user standpoint would include the ability to:

- *perform basic navigational functions related to panning and zooming and place name searches,*
- *adjust viewable area of the map (i. e., make the map bigger or smaller on screen),*
- *select pre-defined areas of interest (regional, sectional, river mile points, other point locations),*
- *add and remove theme layers (like public access points, public lands, restoration sites, etc.),*
- *access metadata (information about the origin of individual data sets),*
- *access legend information,*
- *perform data queries (point- and click- queries and logical queries), and*
- *download to a printable file.*

Selections would be made via menus beginning with a regional screen displaying a color aerial photo mosaic of the Sacramento River. Selections would be made using a graphic user interface with menus and the software would dynamically assemble the relevant files into a map. In cases where data is relevant only at particular scales, layers will be added or deleted automatically as scales change.

Relevant title, legend, and border information will be built into the map generation process. This structure will provide the ability to include any new data that has a geographic reference, including additional map and or aerial data. This includes on ground photography linked to specific geographical areas.

When the system is installed, selected mapped data will be available for World Wide Web viewing. Downloadable maps will be save-able in multiple formats including PDF (Adobe Acrobat), EPS (Illustrator), and/or BMP (raster).

The proposed Internet server will be designed to be aesthetically pleasing and relatively easy to use. We will encourage input both in what we include and what we may want to add as

the site develops. Because our site will be open ended, information can and will change as conditions change or as new information is made available. While our proposal does not plan to actively solicit public involvement, we would certainly both encourage and accept comments.

Finally, a web site is only as valuable as the public's willingness to use information made available. We will be able to determine this popularity by keeping statistics on web use. This information will yield a variety of characteristics about users who visit the site. If we can keep it simple while making it informative, people will use the site.

DWR plans to develop the web site in a series of phases over a three year period of time. This proposal covers Phase 1 of the plan and includes the set-up and initial online delivery of the Web Server and covers the continued maintenance and updating of the server for an additional two years following the establishment of the server. Phase 1 cost is \$400,000 and includes computer hardware costs, data gathering and development costs, server maintenance costs, and project administration.

Phase 1 Tasks

Task 1 - *Develop a web site to provide public access to GIS data relating to restoration, recreation, and public access issues along the Sacramento River and build the engine for delivering this data over the World Wide Web. This task includes the purchasing of necessary hardware and software and the development of necessary code to deploy a working web site.*

Deliverables:

- Working Web Site accessible to public within 1 year of the approval date.*

Task 2 - *Develop online maps, data, and imagery that are cartographically pleasing and focus on providing clear information about restoration, recreation, and public access issues.*

Deliverables:

- Various Map layers (airphotos of the Sacramento River, point features, raster topo map images, a digitized vegetation layer, and a digitized public lands layer with conservation easements).*

- Established point features and polygons linked to information including ground level photos of the river, information on local services, historic event descriptions, land use information, other web sites, information on obtaining permits for use of public lands, future plans for selected resource areas, detailed information on meanderbelt related issues and/or historic river movements.*

- Orthophotos (from existing photography) for areas where no orthophotos currently exist.*

Task 3 - *Maintain and provide updates to the server and its associated data during years 2 and 3. The GIC will maintain the server to ensure its accessibility over the web and provide updates to datasets and maps as necessary.*

Deliverables:

- Continual operation of the server throughout the funding period*

Task 4 - Build and test an Internet engine (hardware and software) for delivering spatial data over the World Wide Web in such a way as to provide a platform for Phase 2 of this project.
Deliverables:

- trial version of the Internet engine available for web examination

Task 5 - Manage and administer project. DWR - Northern District will oversee all parts of this project and will prepare and administer the subcontract with the GIC. Additionally, DWR - Northern District will prepare data for use on the proposed system and provide final versions and data updates to the GIC for inclusion on the Internet Server.
Deliverables:

- Updated versions of all Sacramento River GIS data relevant to the project.

Completion of Task 3 will provide a platform for Phase 2 of this project. While we do not intend to begin phase 2 under this proposal, we wish to provide a springboard for establishing additional functionality and utility for sharing data and maps over the web. Under Phase 2 we intend to provide interactive capabilities over the Web so that other GIS libraries can be assessed and remote users can contribute online to the management and upkeep of this library. Capabilities planned for Phase 2 include the ability to:

- easily update data remotely (i.e., items like public lands and point features),
- provide for a controlled redistribution of data,
- manage information on projects by remote users, and
- access a spectrum of graphical products ranging from pre-prepared maps (where information can be added and subtracted as you go) to situations where you can review all GIS data within a library.

We will seek to gain funding for this second phase of the project once the Internet engine developed in task 3 is tested and proven operable.

ECOLOGICAL/BIOLOGICAL BENEFITS

This project is information-based and will therefore not have any direct ecological or biological benefits on the river. However, its goal is to inform the public by inventorying and posting existing Sacramento River information on the World Wide Web. Benefits will come from its ultimate use, which will be monitored.

TECHNICAL FEASIBILITY

The most exciting aspect about this proposal lies in the fact that all of the information to go in this web site already exists. This information has been created through various state and federal resource agencies and educational institutions using various funding sources and is housed as various GIS files on agency computers. Our proposal seeks funding to organize and provide a public access point to the data.

In order to do this, we need a central point to serve this information to the public. Our proposal would use California State University, Chico's Geographical Information Center as the major archive. Information of this nature is better served from an educational institution. Since each resource agency has a specific agency mission, it is our feeling that an educational institution could better serve all interests from one central location. However, if we so choose, the site could be served from our northern regional office in Red Bluff.

This in no way proposes that master files reside and be controlled from Chico. It merely lets Chico coordinate efforts by working with various agencies to secure clearance to serve spatial information to the public.

DWR plans to develop the web site over a 12 month period of time (beginning after contract is signed). Specific time estimates include:

- *initial meeting to prioritize web components,*
- *collect available map, aerial photography, and web components.*

During this phase, the GIC will review map, airphoto and GIS data that would be available for use (estimated time - 2-6 months). Specific activities include:

- *buy computer hardware. We will need to buy a server with the capability to serve the public efficiently. We also need to design a platform that can be expanded as we move toward Phase 2 and begin interacting with remote users (contributors at other locations, not web users) and managing a much more complex web site,*
- *computer code development. In order to develop the dynamic raster process, code will have to be written that sets up the graphic user interface, and the map generation system. It has to be tested and determined to be foolproof (6 months development, 4 months testing and refining- can occur alongside other work),*
- *develop sectionals of the Sacramento River at predetermined scales from existing coverages or from new data. Map sectionals need to be developed for at least three scales. Label points at each scale also need to be determined. Also, the site needs to be designed to be aesthetically pleasing and effective in communicating information. (3 months),*
- *develop associated maps. Develop any additional maps, including maps of urban areas (if needed). All thematic overlays need to be brought in at this point. Non-digital products need to be scanned and digitized (8 months - ongoing),*
- *establish links between spatial (aerial or map) information and locational information. Links between map locations and text, photography, and/or data need to be established. (2 months)*
- *load and test web site. Site will need to be tested before it is installed (2 months),*
- *take input from various agencies. (ongoing)*
- *make adjustments and serve site from the GIC. (ongoing)*

MONITORING AND DATA COLLECTION METHODOLOGY

Again, the maps and data have already been collected. Using CalFed funding available from this proposal, we intend to gather maps, aerial photography, conventional photography, graphs, diagrams, ground photographs, and relevant documents to provide the public with a Sacramento River Public Information Internet Server.

Initially, we intend to use information collected from our respective agencies. For instance, DWR-Northern District has an extensive collection of Sacramento River aerial photography that will be mosaiced into a large continuous map of the river. Prominent points (like public boat ramps, etc.) will be marked and linked to additional information. Our site will cater to selected map scales which will render maps with selected amounts of information based on scale.

Additionally, DWR-Northern District has developed an extensive Sacramento River GIS with over 100 GIS data files. The Geographical Information Center has mapped the entire Sacramento River and has developed a series of sectional base maps and riparian overlays which include the project area. We have also maps of numerous restoration sites.

A GIS containing ownership information that was used to publish is available for "Upper Sacramento River Public Lands Access and Recreation Facilities Inventory: Maps and Database Table," in 1994 will be our starting point for gathering information on property ownership and accessibility information. We also intend to inventory other agencies who collect this type of information.

We intend to develop an easy to use graphic user interface. This interface will give the user map choices which control scale as well as thematic content. Themes in turn control informational links.

We are planning this web site proposal in a series of stages. We intend to have the initial site up and running in one year but plan to build a bigger engine that will serve larger amounts of information from remote sites in subsequent stages. We currently run software which tracks web site use to determine how many and where visits originate and will monitor visits closely to measure our success.

LOCAL INVOLVEMENT

Since this project does not include a specific site and since it does not propose to do any physical work on the ground, we do not anticipate the need to coordinate with or but we plan to notify counties of the nature of our proposal. Since public-private property accessibility issues are important, we expect to get widespread support. The public has a need to know when they can and cannot go and the private landowner needs to be assured that his privacy needs are being respected.

This project will undoubtedly be of great value to local agencies and organizations from

an informational standpoint. Initially, we will be providing them with web access to information and maps regarding many of the issues (e.g., habitat conservation, land accessibility, recreational opportunities, etc.) relevant to their spheres of influence. Ultimately, we hope to provide these agencies and organizations with direct access to the data in order to enhance their ability to address the issues.

COST

Task Budget

Task	Direct labor hours	Direct salary and Benefits	Service Contracts	Overhead and indirect costs	Total cost
1. Develop Web Site			80,000		80,000
2. Develop online maps, data, and imagery			80,000		80,000
3. Maintain and update server and data			100,000		100,000
4. Build and test Internet engine			40,000		40,000
5. Manage and administer project	1,754	64,100		35,900	100,000
TOTAL	1,754	64,100	300,000	35,900	400,000

COST (Cont.)

Quarterly Budget

TASK	1 st Qtr. 2000	2 nd Qtr. 2000	3 rd Qtr. 2000	4 th Qtr. 2000	1 st Qtr. 2001	2 nd Qtr. 2001	3 rd Qtr. 2001	4 th Qtr. 2001	1 st Qtr. 2002	2 nd Qtr. 2002	3 rd Qtr. 2002	4 th Qtr. 2002
1. Develop and test Web Site	40,000	20,000	10,000	10,000								
2. Develop online maps, data, and imagery	30,000	20,000	20,000	10,000								
3. Maintain and update server and data					12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500
4. Build and test Internet engine		10,000	10,000	20,000								
5. Manage and administer project	12,500	12,500	12,500	12,500	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250
TOTAL	82,500	62,500	52,500	52,500	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750

COST SHARING

No specific cost sharing proposals are being developed at this time. We have submitted requests to other funding agencies that would partially fulfill these needs but none are focused specifically on the Sacramento River nor do they attempt to focus on these specific issues.

This project will make available to the public, local governments, management agencies, and CalFed the large number of GIS databases already developed under the SB-1086 Program. The cost of developing this data has already been absorbed by participating groups and agencies. Additionally, this project will potentially provide a mechanism for greater coordination among agencies and organizations regarding expensive regional datasets.

APPLICANT QUALIFICATIONS

DWR - NORTHERN DISTRICT

Project Management and coordination will be the responsibility of DWR Northern District Office. The Northern District Office has extensive experience in fisheries and riparian vegetation restoration projects throughout Northern California including the Sacramento River. The Northern District office has staff qualified in the areas of botany, hydrology, hydrogeology and has conducted extensive botanical and fluvial-geomorphic field studies along the Sacramento river. DWR Northern District has provided technical support and contract administration to SB1086 since the program was begun over 10 years ago.

The Project Manager will be Stacy Cepello, Environmental Specialist IV, who is the lead person for the environmental services section of the Northern District Office. Stacy has over 12 years of experience on fisheries and riparian restoration projects in the Sacramento Valley. The project manager will draw on the staff expertise and resources available in the Northern District Office for support.

The GIS Coordinator for this project will be Eric Haney, Research Analyst II (GIS), who is the current manager of the Sacramento River GIS. Eric has over 5 years experience with natural resource issues in Northern California and has been heavily involved in the development of GIS and Database applications to address these issues. The GIS Coordinator will provide data and technical oversight for this project.

The Administrative Project Manager will be Barbara Polson, Chief of the Administrative Branch of DWR's Northern District Office.

GEOGRAPHICAL INFORMATION CENTER - CSU CHICO

Project Manager Qualifications

CHARLES W. NELSON

Director and Adjunct Research Professor
Geographical Information Center
California State University, Chico
Chico, CA 95926-0425
530-898-5969, Fax: 530-898-6781
cwnelson@csuchico.edu

EDUCATION

1978 Master of Arts - California State University, Chico (Geography)
1972 Bachelor of Arts - California State University, Chico (Geography)
Various Professional Training - ARC/INFO, Introduction to Avenue, and
Managing a GIS Training Workshops, Environmental Systems Research Institute
(ESRI) Redlands, California.

EMPLOYMENT

1995-present Director, Geographical Information Center, California State University, Chico.
1998-present Adjunct Research Professor in Geography, Department of Geography and Planning, California State University, Chico.
1978-1995 Cartographic Analyst/Project Director - Department of Geography and Planning, California State University, Chico.
1976-1995 Professional Cartographer / Graphic Computer Systems Specialist.

PUBLICATIONS AND MEETINGS

Average of five papers, talks or articles/publications on current Center projects per year.

HONORS

Foundation Recognition and Achievement Award - University Foundation, California State University, Chico, 1995.

Nominee (and runner-up award) - Outstanding Staff Employee of the Year Award, California State University, Chico, 1979 and 1998.

COMMUNITY SERVICE

Development Review Committee - County of Butte, California. 1995-present.
Appointed to four year term beginning January, 1995.

Planning Commissioner - County of Butte, California. 1991-present.
Appointed to a second four year term beginning January, 1995 representing District 3 - Northeastern Butte County.

Mayor/Vice Mayor - City of Chico, California.
Appointed to the City Council in August, 1986. Elected to the Council for a four year term in November, 1986. Appointed to a two year term as Mayor in December, 1986 and Vice mayor in 1988.

Planning Commissioner- Planning Commission, City of Chico, California. 1977-1984.
Appointed to the Commission in July, 1977. Appointed Chair from 1982-1984. Third appointed term ended in August, 1986 with appointment to the City Council.

Member - Architectural Review Board, City of Chico, California. 1980-1983.

THE GEOGRAPHICAL INFORMATION CENTER

California State University, Chico

The Geographical Information Center (GIC) at California State University, Chico, was established in 1988 to introduce digital mapping technology to the region and to provide valuable on-the-job training and employment opportunities for our students. The Center's mission is both academic and service oriented. While the training and eventual placement of students is the key aspect and reason for the Center, the development of the GIC has resulted in a renewed University commitment to strengthen ties to the public and private sector of the North State.

Our primary areas of expertise include cartography, remote sensing, and geographical information systems (GIS). Contracts are administered through the University Foundation, providing both direct contracts and interagency agreements. The GIC offers ESRI-certified instruction in ArcView.

CAPABILITIES

Applied Technology

Geographical information systems (GIS)¹
Map compilation and production
Map scanning and digitizing
Orthophoto development
Computer cartography
Aerial photo interpretation
Satellite image processing
Global positioning systems (GPS)

Education

Manuals
Demonstration Projects
User Training
Workshops
Seminars
Consultations

¹ ESRI products (ARCINFO, ArcView, ArcCAD software).

FACILITIES AND EQUIPMENT

The GIC is housed in the College of Behavioral and Social Sciences, located in Butte Hall on the California State University, Chico campus. Our lab software runs in UNIX, Windows 95, Windows NT, and Macintosh operating systems. Our central campus location gives us direct access to numerous academic resources.

RECENT GIC CONTRACTS

Enclosed is a partial list of recent GIS contracts related to resources mapping. All use ARCCINFO or ArcView software.

Sacramento River Stream Corridor Protection Program - Phases 1-4. Mapping riparian vegetation along the Sacramento River and its Sacramento Valley tributaries from Keswick Dam to Collinsville, for the CalFed Bay-Delta Program, California Department of Water Resources, the U.S. Bureau of Reclamation and the California Department of Fish and Game. 1991-present.

Butte, Deer, Big Chico, and Battle Creek Conservancy Mapping. Developing supporting

maps and a GIS to support four individual conservancy efforts. 1996-present.

Cantara Vegetation Mapping. Mapping vegetation in the Cantara watershed of the Upper Sacramento River for the California Department of Fish and Game. 1997-present.

Delta Flood Mapping. Mapping Sacramento-San Joaquin Delta islands for a flood information web site for the California Department of Water Resources- Central Division. 1997-1998.

Sacramento River Access: Peterson Addition. Mapping and GIS development for a potential park site for the California Department of Parks and recreation. 1998-present.
Butte County Wildlife Refuges GIS. Using GIS to develop a mosquito control strategy for the Butte County Mosquito and Vector Control District. 1998-present.

CEC Statewide GIS. Developing a statewide GIS and supporting maps for the California Energy Commission. 1998-present.

San Joaquin Valley Vernal Pool Mapping. Mapping and classifying vernal pool complexes in Madera, Merced, San Joaquin, Stanislaus, and Fresno Counties for the California Department of Fish and Game. 1998-present.

Tehama County Vernal Pool Mapping. Mapping and classifying vernal pool complexes in Tehama County for the California Department of Fish and Game. To begin 3/99.

Northern Sacramento Valley Sustainable Landscapes Project. Using digitized growth projections and hardwood GIS coverages to assess potential hardwood loss in five northern California counties for the California Department of Forestry and Fire Protection. 1995-1998.

California Rangeland Statistics. Development of a manual and web site illustrating distribution of rangelands in California for the California Department of Forestry and Fire Protection. 1996-1998.

Avian Mortality Study. GIS to support study of various wind generating facilities in California for the California Energy Commission. 1996-1997.

Feather River Riparian Mapping. Assessing river channel and vegetation change to a portion of the Feather River in Butte County for the California Department of Water Resources- Central Division. 1998.

FOR MORE INFORMATION

Mr. Charles W. Nelson, Director, Geographical Information Center, California State University, Chico, Chico, CA 95929-0425, (916) 898-5969 or Email: cnelson@gic.csuchico.edu

Project Staffing

The GIC staff ranges between ten and twenty employees which includes Interns through the Director. The major personnel working on this proposal are all on our current GIC staff and include a project manager, a systems analyst, GIS analysts and assistants, and interns as needed.

While Mr. Nelson will act as the Principal Investigator for this project, the majority of the setup work will be done by our GIS Systems Analyst, Aaron Stafford. Aaron has two years of programming experience with the GIC. He is a Computer Science undergraduate student at California State University, Chico, who will complete his B.S. degree in December of 1999. As GIS Systems Analyst at the GIC, Mr. Stafford developed and currently maintains our World Wide Web site (<http://www.gic.csuchico.edu>).

The remainder of the work will be done by various GIC staff.

APPLICATION FOR FEDERAL ASSISTANCE

1. TYPE OF SUBMISSION <i>Application</i> <input type="checkbox"/> Construction <input type="checkbox"/> Non-Construction		<i>Preapplication</i> <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction		2. DATE SUBMITTED 4/16/99	Applicant Identifier
				3. DATE RECEIVED BY STATE	State Applicant Identifier
				4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier
5. APPLICANT INFORMATION					
Legal Name: The CSU, Chico Research Foundation			Organizational Unit:		
Address (give city, county, state, and zip code): California Department of Water Resources 2440 Main Street Red Bluff, CA 96080			Name and telephone number of person to be contacted on matters involving this application (give area code) Technical: Stacey Cepello: (530) 529-7352 Budgetary: Stacey Cepello: (530) 529-7352 Contractual: Barbara Polson: (530) 529-7339		
6. EMPLOYER IDENTIFICATION NUMBER (EIN): 5 2 - 1 6 9 2 6 3 4			7. TYPE OF APPLICANT: (enter appropriate letter in box) <input checked="" type="checkbox"/> A A. State B. County C. Municipal D. Township E. Interstate F. Intermunicipal G. Special District H. Independent School Dist. I. State Controlled Institution of Higher Learning J. Private University K. Indian Tribe L. Individual M. Profit Organization N. Other (Specify) _____		
8. TYPE OF APPLICATION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision If Revision, enter appropriate letter(s) in box(es): <input type="checkbox"/> <input type="checkbox"/> A. Increase Award B. Decrease Award C. Increase Duration D. Decrease Duration Other (specify): _____			9. NAME OF FEDERAL AGENCY: CalFed		
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: TITLE: [] [] - [] [] [] []			11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Sacramento River Public Information Internet Server Phase I		
12. AREAS AFFECTED BY PROJECT (cities, counties, states, etc.): Entire Sacramento River					
13. PROPOSED PROJECT:		14. CONGRESSIONAL DISTRICTS OF:			
Start Date Oct. 99	Ending Date Sep. 02	a. Applicant 2 & 3		b. Project Various	
15. ESTIMATED FUNDING:		16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?			
a. Federal	\$ 400,000.00	a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE _____			
b. Applicant	\$.00	b. NO. <input checked="" type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372 <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW			
c. State	\$.00				
d. Local	\$.00				
e. Other	\$.00				
f. Program Income	\$.00				
g. TOTAL	\$ 400,000.00	17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes If "Yes," attach an explanation. <input checked="" type="checkbox"/> No			
18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.					
a. Typed Name of Authorized Representative Barbara Polson		b. Title Chief Administrative Officer		c. Telephone number (530) 529-7339	
d. Signature of Authorized Representative				e. Date Signed	

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BUDGET INFORMATION - Non-Construction Programs

OMB Approx . 0348-0044

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. WebSite		\$	\$	\$80,000	\$	\$0
2. Maps	N/A			\$80,000		\$0
3. Data/Internet				\$140,000		\$0
4. Management				\$100,000		\$0
5. TOTALS		\$0	\$0	\$400,000	\$0	\$0

6. OBJECT CLASS CATEGORIES	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
a. Personnel	\$50,873	\$	\$	\$	\$50,873
b. Fringe Benefits	\$13,227				\$13,227
c. Travel					\$0
d. Equipment					\$0
e. Supplies					\$0
f. Contractual	\$300,000				\$80,000
g. Construction					\$0
h. Other					\$0
i. Total Direct Charges (sum of 6a-8h)					\$0
j. Indirect Charges	\$35,900				\$35,900
k. TOTALS (sum of 6i and 6j)	\$400,000				\$400,000

7. PROGRAM INCOME	\$0	\$0	\$0	\$0	\$0
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SECTION C					
(c) Grant Program		(b) Applicant	(c) State	(d) Other sources	(e) TOTALS
8.		\$0	\$0	\$0	\$0
9.					\$0
10.					\$0
11.					\$0
12. TOTALS (sum of lines 8 and 11)		\$0	\$0	\$0	\$0
FUTURE FUNDING PERIODS (YEARS)					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$250,000	\$62,500	\$62,500	\$62,500	\$62,500
14. Non-Federal	\$0	\$0	\$0	\$0	\$0
15. TOTAL (sum of lines 13 and 14)	\$250,000	\$62,500	\$62,500	\$62,500	\$62,500
FUTURE FUNDING PERIODS (YEARS)					
	(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16.		\$80,000	\$0		
17.		\$80,000	\$0		
18.		\$0	\$87,500		
19.		\$60,000	\$60,000		
20. TOTALS (sum of lines 16 - 19)		\$210,000	\$137,500	\$0	\$0
21. Direct Charges:	\$364,100	22. Indirect Charges	\$36,900	Base (Salaries & Wages)	
23. Remarks					

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